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09/674,839	11/06/2000	Klaus Schaaf	11150/22	7091

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EXAMINER

JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/674,839

Applicant(s)

SCHAAF ET AL.

Examiner

Jakieda R Jackson

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-21 is/are allowed.
- 6) ☒ Claim(s) 8-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Response to Amendment***

1. In response to the Office Action mailed February 7, 2005, applicants submitted an amendment filed on April 25, 2005, in which the applicant traversed and requested reconsideration with respect to **claims 1 and 13**.

### ***Response to Arguments***

2. In response to applicants argument for a request of published information and/or affidavit under 37 C.F.R. 1.104(d)(2) to support any and all assertions of well known fact, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; ***nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). A reference does not have to be furnished to teach, suggest, or motivate well-known facts, rather the knowledge generally available to one of ordinary skill in the art.***

Applicants further argue regarding claims 8 and 13 that McGregor et al. do not disclose subtracting a frequency-shift of a first microphone from a total signal of a second microphone before frequency shifting the second microphone. Applicants also argue that McGregor et al. do not subtractively superimpose a loudspeaker and microphone signal of the respective subsection and argues that the well known prior art cited by the examiner is not understood and clarification is respectfully requested.

Art Unit: 2655

Applicant's arguments filed April 25, 2005 have been fully considered but they are not persuasive.

As presented in the office action mailed on February 7, 2005, a phase reverser is used to reverse the phase of the sound picked up by the additional microphone, to cancel out noise, as taught by McGregor (column 6, line 65 - column 7, line 6). The purpose of the frequency shift is to prevent feedback, which cancels what is fed (any unwanted noises). Adding a phase reversal is equivalent to subtracting a non-phase reversal signal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McGregor's method such that it subtracts a frequency-shifted signal of a first microphone from a total signal of a second microphone before frequency shifting the second microphone, so that the sign of the signal can be reversed (180 degrees), i.e., adding a signal with a phase reverse is that same as subtracting, to eliminate unwanted components causing feedback (column 6, line 65 – column 7, line 6).

Applicant's arguments that McGregor et al. discuss a modification in which an additional microphone may be provided and that the microphone is solely provided for the purpose of picking up engine noise, and accordingly does not detect a signal that includes a voice signal, is not persuasive. The microphone cannot avoid picking up a voice signal or any other sounds/noises. The microphone picks up anything that is there (i.e. if someone is talking, the speech signal will be detected. That speech signal may be weak, but it will not be omitted).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 8-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over McGregor et al. (EP 0 304 257 A, rejections cited using U.S. version (Patent No. 4,965,833)), hereinafter referenced as McGregor in view of well known prior art.

Regarding **claim 8**, McGregor discloses a method for operating a voice-controlled system in a motor vehicle (column 1, lines 6-7), comprising the steps of:

detecting a total signal (column 3, lines 62-65) by a plurality of microphones (microphones; column 3, line 41) the total signal including a voice signal (voices) and background noise signal (noise; column 1, lines 26-29);

performing a frequency shift (frequency shifters) by an amount of delta F on the total signal detected by the microphone (column 4, lines 6-22);

subtracting the frequency-shifted total signal of a first one of the plurality of microphones (two first-mentioned; microphones) from the detected total signal of a second one of the plurality of microphones (two second microphones) before shifting the frequency (signal fed to amplifier/electrical conditioning unit) of the total signal of the

second one of the plurality of the microphones and vice versa (column 2, lines 1-15 with column 1, lines 49-51 and column 6, lines 39-45); and

transmitting the frequency-shifted total signal (column 4, lines 1-22) to one of an input to a voice-controlled device (microphone) and at least one loudspeaker (loudspeaker; column 3, lines 41-47), but does not specifically teach subtracting a frequency-shift of a first microphone from a total signal of a second microphone before frequency shifting the second microphone.

However, a phase reverser is used to reverse the phase of the sound picked up by the additional microphone, to cancel out noise, as taught by McGregor (column 6, line 65 - column 7, line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McGregor's method such that it subtracts a frequency-shifted of a first microphone from a total signal of a second microphone before frequency shifting the second microphone, so that the sign of the signal can be reversed (180 degrees), i.e., adding a signal with a phase reverse is subtracting, to eliminate unwanted components causing feedback (column 6, line 65 – column 7, line 6).

Regarding **claims 9 and 14**, McGregor discloses a method and a device wherein the voice-controlled system includes at least one of a communication device and a two-way intercom device (column 5, lines 4-7).

Regarding **claim 10**, McGregor discloses the method further comprising the steps of: defining an arbitrary acoustic model (acoustic enclosure) based on (caused by) the detected total signals (noise detected; column 3, line 62 – column 4, line 4); and transmitting a signal corresponding to the acoustic model (column 4, lines 1-22) to a respective summation point (each feed some of the signal) for subtraction from the detect total signal before the respective frequency shifting (signal fed to amplifier/electrical conditioning unit; column 2, lines 1-15).

Regarding **claim 11**, McGregor discloses a method and a device wherein a passenger compartment of the motor vehicle is divided into at least two acoustic subspaces (front and rear), each of the acoustic subspaces including at least one microphone location (microphone in front) and at least one loudspeaker location (loudspeaker in rear; column 2, lines 1-15);

and wherein the frequency shift (frequency shifters) is performed between the microphone location (microphone) of one of the subspaces and the loudspeaker (loudspeaker) location of another one of the subspaces (column 4, lines 6-22);

and wherein each acoustic model is defined between the microphone location and the loudspeaker location of the respective acoustic subspace (acoustic enclosure) to thereby form a signal-based, closed loop electroacoustical control circuit (closed acoustic feedback path; column 4, lines 1-22).

Regarding **claim 12**, McGregor discloses a method and a device wherein each acoustic model is defined in accordance with voice (voice) and noise signals (noise; column 1, lines 26-29) detected in the respective acoustic subspace (acoustic position;

Art Unit: 2655

column 2, lines 1-11) and additional noise signals detected in the entire passenger compartment (passengers; column 5, lines 7-15) so the after the signal corresponding to the acoustic model is subtracted from the total signal substantially only the voice signal remains (cancel noise; column 7, lines 4-6).

Regarding **claim 13**, McGregor discloses a device for operating a voice-controlled system in a motor vehicle, the motor vehicle including a passenger compartment divided into at least two subsections (front and rear), each subsection including at least one microphone (microphone) and at least one loudspeaker (loudspeaker; column 2, lines 1-15), the device comprising:

- a transmitter (microphone) for transmitting at least one of the voice messages and voice commands (voices; column 1, lines 26-29 with column 2, lines 1-15);

- a frequency shifting device (frequency shifters) connected between the microphones (microphone) of one of the subsections and the loudspeakers (loudspeaker) of another one of the subsections (column 4, lines 6-22); and

- a summation point corresponding to each subsection, the summation point subtractively superimposing a parallelly tapped loudspeaker signal (figure 2, elements 7) and the microphone signal of the respective subsection (figure 2, elements 6), but does not specifically teach subtractively superimposing the signals.

However, a phase reverser is used to reverse the phase of the sound picked up by the additional microphone, to cancel out noise, as taught by McGregor (column 6, line 65 - column 7, line 6).



Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McGregor's method such that it subtractively superimposes the signals, so that the sign of the signal can be reversed (180 degrees), i.e., adding a signal with a phase reverse is subtracting, to eliminate unwanted components causing feedback (column 6, line 65 – column 7, line 6).

Regarding **claim 15**, McGregor discloses the device wherein the subsections are open subsections (four normal passenger seats; figure 1, elements 2-5 and column 2, lines 57-59).

Regarding **claim 16**, McGregor discloses the device further comprising an acoustic model generator provided between each parallel tapped loudspeaker signal (adjacent loudspeaker; column 2, lines 62-65) and the respective summation point (adjusted to prevent 'howl-around'; column 3, lines 4-7), the acoustic models generated at least one of controlling and post processing the respective loudspeaker signal (column 3, lines 8-12), a resulting signal from each acoustic model generator being transmitted to the respective summation point (column 4, lines 43-47).

Regarding **claim 17**, McGregor discloses the device wherein the acoustic model generators include sound pattern detectors for separating engine (engine noise) and driving noises (open window noises; column 5, lines 13-15 and road noises; column 1, lines 26-29) from speech-generated acoustical signals (cancel noise; column 7, lines 4-6) and for separating speech-generated signals (speech frequencies passed) from the fed-back echo signals (feedback; column 3, lines 60-66).

***Allowable Subject Matter***

5. **Claims 18-21** are allowed.

The following is a statement of reasons for allowance:

As for independent claim 18, it recites a method for operating a voice-controlled system in a motor vehicle. Prior art such as McGregor show similar methods but fail to teach the recited method wherein  $\Delta F$  is 5 HZ, to thereby suppress feedback.

As for independent claim 19, it recites a method for operating a voice-controlled system in a motor vehicle. Prior art such as McGregor show similar methods but fail to teach the recited method wherein the frequency shift performed on the total signal of the first microphone is by a first amount  $\Delta F$ , and the frequency shift performed on the total signal of second microphone is by a second amount  $\Delta F$  different than the first amount  $\Delta F$ .

As for independent claim 20, it recites a device for operating a voice-controlled system in a motor vehicle. Prior art such as McGregor show similar methods but fail to teach the recited device wherein the frequency-shifting device is configured to perform a frequency shift by an amount of  $\Delta F$  on each microphone signal.

Dependent claim 21 is allowed because it further limits the parent claim.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571.272.7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2655

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ  
July 13, 2005

  
SUSAN MCFADDEN  
PRIMARY EXAMINER